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This article investigates the impact of the competitive intensity on the stadium attendance for Italian soccer in three Serie A seasons (2012-13 to 2014-15). The central element of novelty concerning the existing literature is that fans expectations are also included among the explanatory variables of the Tobit model. Our results show that competitive intensity has a significant impact on match-day attendance in relation to all the sporting prizes but Europa League qualification. Moreover, we find evidence supporting the existence of reference-dependent preferences, where the attendance increases when the home team rank is higher than the pre-season expectations.

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Introduction

Since Rottenberg's (1956) conceptualisation of the uncertainty-of-outcome (UoO) hypothesis driving demand for sporting events, competitive balance (CB) and the UoO hypothesis are the most widely debated topics within the economics of sport (Schreyer & Torgler, 2018; Fort, 2018). However, this interest has led to inconsistencies – such as the interchangeable use of playing talent, playing quality and financial capabilities – when defining CB, which Kringstad's (2008) thesis explored at length. Accordingly, we define competitive balance as the equilibrium of playing talent quality and financial strength between teams in any given league (Owen 2012; Ramchandani & Wilson, 2014). This equilibrium in the quality of playing talent and financial resource leads to increased UoO, where perfect uncertainty occurs when each team has an equal chance of winning, that is, a 50% chance of winning (Sloane 2006).

Therefore, the general school of thought within the sport economic literature suggests that competitive balance drives the UoO for the sporting event, increasing demand, thus revenue (Fort & Quirk, 1992; Vrooman, 2000; Depken, 2002; Bourgheas & Downward, 2003; Borooah & Mangan, 2012; Pawlowski & Budzinski, 2013; Nalbantis, Pawlowski & Coates, 2017; Lenten, 2015; Kringstad, 2018). However, conceptually, UoO becomes more complex as the UoO hypothesis is a multifaceted concept (Kringstad & Gerrard, 2007). Generally, these facets can be deducted to match, seasonal and long-run uncertainty, representing micro, meso and macro levels of uncertainty. While all important, our focus is the seasonal-uncertainty level, which, according to Cairns (1987, p.260);

"*refers to the outcome of the championship. It is suggested that demand will be higher the closer is the contest: the more teams that might win, and the longer such close competition lasts*".

However, Cairns only accounts for the championship (title) race, omitting the relegation battle posed as another dimension by Szymanski and Kuypers (1999). Even then, Kringstad and Gerrard (2004, 2005, 2007) point to a more comprehensive notion of seasonal uncertainty, accounting for both title race and relegation battle, as well as, the supranational competition prevalent within European leagues, through their notion of competitive intensity (CI).

The impact of CI on fan demand lacked empirical evidence until Scelles, Durand, Bonnal, Goyeau and Andreff (2013a, 2013b) analysed the impact of competitive balance and intensity on fan attendance in the French football Ligue 1. However, the current issue is that the CI research does not account for the pre-season expectations of fans. For example, consider two teams competing for the UEFA Europa League (the lower tier to UEFA's Champions League) entry: team A won the title in the previous season whereas team B narrowly beat relegation. Even though they are competing for the same prize, demand for team A would logically fall and demand for team B would increase, as the former is underachieving and the latter overachieving pre-season expectations. Essentially, we conceptualise this in terms of Coates et al. (2014) reference-dependent preferences, referring to a demand increase as a consequence of a team's overachievement. Research on the reference-dependent preferences has gone relatively unexplored (Humphreys & Zhou, 2015; Gasparetto & Barajas, 2018; Pawlowski et al., 2018), therefore we aim to fill this gap inspired by Scelles, Durand, Bonnal, Goyeau and Andreff (2016).

Consequently, we follow Scelles et al. (2013a, 2013b, 2016) work by analysing CI within the Italian Serie A, but also adapting the regression model to account for the difference between

the expected and actual seasonal performance of a team – accounting for the reference-dependent preferences, for the first time. Furthermore, following Sloane's advice (2006) we only use ticket sales for individual fixtures, rather than an aggregate attendance variable including season-ticket holders, principally because CI relates to seasonal uncertainty and its evolution over the season is something that, theoretically, would not influence season-ticket holders.

This paper firstly reviews the relevant literature on demand for sport, specifically competitive balance, league standing effect, competitive intensity and reference-dependent preferences. The structure and main issues of Serie A football are then discussed, followed by the data description and model specification. The empirical results are finally presented and discussed in relation to previous research, demonstrating where this research fits in the broader context, followed by our conclusions.

Literature Review

Ever since seminal work by Rottenberg (1956) and Neale (1964) as well as subsequent work by El Hodiri and Quirk (1971), and Scully (1974), analysing the demand for professional team sports has boomed dominating the sport economic literature for over half a century (Santos & Garcia, 2011). Szymanski (2009) points to a vast array of research topics just within professional team sports, yet most of the research tends to focus on factors influencing or affecting demand, often termed determinants-of-demand (Borland & McDonald, 2003; Lera-López, Ollo-López & Rapún-Gárate, 2012). Generally, this body of work focuses on neoclassical conceptualisations following a utility-opportunity cost trade-off (Downward, 2007; Downward, Dawson & Dejonghe, 2009; Scheerder, Vos & Taks, 2011; Thibaut Vos & Schreeder, 2013) – meaning influences on demand can be vast. These influences have been categorised – to different degrees – by multiple researchers (Thomas & Jolsen, 1979;

Greenstein & Marcum, 1981; Baimbridge, Cameron, & Dawson, 1996; Garcia & Rodriguez, 2002; Leeds & Sakata, 2011), but the most comprehensive overview and categorisation of determinants-of-demand have been provided by Borland and McDonald (2003).

Caruso, Addesa and Di Domizio (2017) summarise Borland and McDonald's (2003) review, stressing five key elements; *i*) competitive balance: increasing match, seasonal and long-run uncertainty increases demand; *ii*) contest quality: the higher the quality level of the fixture, the higher the attendance; *iii*) viewing quality: new stadia and facilities draw higher demand, and demand is sensitive to weather conditions and match timing; *iv*) price: the level of demand sensitivity to price is variable among teams, and *v*) TV: individual fixture demand can be negatively affected by broadcasting. One common aspect of all demand-based research is the appreciation of the importance of competitive balance within professional team sports. Within the sport economic literature, competitive balance is considered the essence of professional team sports (Garcia & Rodriguez 2002; Humphreys 2002; Forrest & Simmons, 2002, 2006; Forrest, Simmons & Buraimo, 2005; O'Reilly Nadeau, Kaplan & Rahinel, 2008; Corral, 2009; Iho & Heikkila, 2009; Curran, Jennings & Sedgwick, 2009)

Rottenberg (1956, p. 246) identified the idea of competitive balance in his seminal article, suggesting "the tighter the competition, the larger the attendance", so the more equal distribution of win percentages, the higher demand will be. However, Rottenberg also postulated that *ceteris paribus*, higher revenue teams attract better quality playing talent than lower revenue generating teams, meaning fixtures become "certain, and attendance will decline" (Rottenberg, 1956, p. 247). Similarly, Neale (1964, p. 1) termed the *Louis-Schmeling paradox*, using the heavyweight title fight between Joe Louis and Max Schmeling to identify "doubt about the competition is what arouses interest", referring to the lack of monopoly between the two fighters. Neale (1964) also identified that *ceteris paribus*, as teams in a league

nearer to a resource (financial and playing talent) equilibrium, competition becomes balanced, increasing the unpredictability of outcomes, which in turn increases fan interest. This concept would become the centre of the economic analysis of professional team sports for decades. The extent of literature on competitive balance led Fort and Maxcy (2003) to dichotomise bodies of work: analysis of competitive balance (ACB) and the UoO hypothesis. ACB focusses on trends over time often concerning structural or regulatory changes, and the UoO hypothesis focusses on seasonal competitive balance, and demand – the latter is of interest here.

The body of literature analysing the UoO hypothesis provides inconsistent empirical results, and whilst some research supports the hypothesis (Peel & Thomas, 1997; Carmichael, Millington & Simmons, 1999; Wekli & Zlatoper, 1999; Falter & Perignon, 2000; Levin & McDonald, 2009; Schreyer & Torgler, 2018), the vast majority rejects it (Whitney, 1988; Knowles, Sherony & Haupert, 1992; Rascher, 1999; McDonald & Rascher, 2000; King, Owen & Audas, 2012; Coates & Humphreys, 2012; Coates, Humphreys & Zhou, 2014; Pérez, Puente & Rodríguez, 2017; Artero & Bandrés, 2018). Indeed, while these articles focus on a range of sports and therefore may yield differing outcomes, hitherto also within European association football the evidence is not conclusive (Peel & Thomas, 1992, 1996; Forrest & Simmons, 2002; Goossens, 2006; Buraimo & Simmons, 2008, 2009; de Groot, 2008; Michie & Oughton, 2004; Szymanski, 2001; Pawlowski & Anders, 2012; Scelles et al., 2013a, 2013b; Montes, Sala-Garrido & Usai, 2014; Andreff & Scelles 2015; Caruso et al., 2017). Pawlowski (2013) suggests that empirical proof of the UoO hypothesis is absent because the proxies used to measure it are inadequate. The problem of effectively measuring competitive balance has been the focus of sport economic literature (Dobson & Goddard, 2011), meaning there is a multitude of available measures, which have been thoroughly reviewed by Goossens (2006), Owen (2012) and Evans (2014). Generally, apart from recent behavioural economic work by Budzinski and Pawlowski (2017), Nalbantis et al. (2017) and Pawlowski, Nalbantis & Coates

(2018), measures of seasonal uncertainty utilise *ex-post* analysis or "the…distribution of actual sporting outcomes" (Kringstad & Gerrard, 2007, p. 152), which is often captured through standard-deviation measures, such as the universally applied yet misleading Noll-Scully measure (Noll, 1988; Scully, 1989; see Owen, 2012 for a full review; and Lee, Kim & Kim, 2018, for recent developments).

The number of measures, especially for seasonal uncertainty, is a testament to the multifaceted nature of the UoO hypothesis. Yet, as Coates et al. (2014) point out, Neale's (1964) natural extension to the UoO hypothesis, the league standing effect, has been relatively neglected for years. Neale (1964) notes that gate receipts will be larger the closer the league standings, and the frequency in which they change, implying that with increased league-wide competitive balance more teams will beat one another, thus continuously changing the league standings. However, this conceptualisation lacked empirical support until Coates et al. (2014) developed a reference-dependence model, which Humphreys and Zhou (2015, p. 16) applied to the league standing effect, concluding that "*There is no evidence that greater turnover in league standings, measured at the daily or cumulated levels, is associated with increases in attendance at MLB games*".

While there has been somewhat limited interest in the league standing effect, this concept forms the basis of what Kringstad and Gerrard (2004, 2005, 2007) term competitive intensity (CI). This notion implies that the demand for professional team sport is more contingent on intra-competitions or multi-prizes within the season. For example, within a European context association football (soccer) has not only the title race and relegation/promotion battle prizes identified by Cairns (1987) but also the qualification into inter-European competitions, i.e. UEFA's Champions League and Europa League competitions. The idea is that the more teams in contention for these multi-prizes, the higher

the demand will be. Thus, much like Neale's (1964) league standing effect, demand (and excitement) is derived from the changes or possibilities of changes within league standings for prizes. The competitive intensity notion lacked any empirical attention until Scelles et al. (2013a, 2013b) and Andreff and Scelles (2015) investigated the notion within French football Ligue 1, with Scelles et al. (2016) explicitly highlighting the importance to distinguish between different sporting prizes when creating the variables aimed to capture competitive intensity.

However, while we account for the different prize structure of the league, we must also account for the pre-season expectations to determine the actual impact of CI, which is something the current literature has neglected. For example – as previously mentioned – within European football, the multi-prizes (not including domestic cup competitions) available to teams are the title, UEFA's Champions League qualification, UEFA's Europa League qualification, and the relegation battle. However, the influence of being in contention for these prizes also depends on the pre-season expectations, or what Coates et al. (2014) termed reference-dependent preferences. This theory suggests a consumer receives not only a "consumption" utility - corresponding to the utility from standard consumer theory - from attending a sporting event, but also a "gain-loss" utility, depending on differences between expected and actual game outcome.

Although Humphreys and Zhou (2015) also considered utility from league standing changes and utility from the quality of the game, very little research has focused on reference-dependent preferences and demand for professional team sports (Humphreys & Zhou, 2015; Gasparetto & Barajas, 2018; Pawlowski et al., 2018). As shown by Budzinski and Pawlowski (2017), several studies have tried to find an explanation for the inconsistent empirical results regarding the UoO hypothesis by focusing on the motivations of the behavioural anomalies leading to the divergence between the UoO hypothesis and consumer choices. However, no

study has taken into account the gained (or lost) utility deriving from a better (or worse) team's seasonal performance compared to the fans' pre-season expectations.

Consequently, we conceptualise Coates et al. (2014) reference-dependent preferences as a situation where demand increases with a team's over-performance and decreases with under-performance based on pre-season expectations. To provide further clarity, consider, for example, four teams: A, B, C and D. Team A was expected to compete for the title, but competes for the UEFA Champions League entry. Team B was expected to compete for UEFA Europa League entry but competes for the title. Team C was expected to compete in the relegation battle but competes for a UEFA Europa League qualification position. Team D was expected to finish mid-table but competes in the relegation battle. Team B and Team C would see an increase in demand due to the over-performance based on pre-season expectations, whereas Team A and Team D would see a decrease due to the under-performance based on pre-season expectations.

Accordingly, this paper extends the body of CI research by integrating the pre-season expectations within our stadium demand model, allowing us to explore the existence of reference-dependent preferences in the Italian Serie A. Furthering the novelty, we address recent calls for sport demand researchers to use gate receipts and not aggregate attendances (Sloane, 2006). Using gate receipts is important because fans who purchase season-tickets do so before the start of the season regardless of their club's performance or a league's competitiveness, and are generally the most committed consumers, thus not particularly affected by match-day related determinants (Caruso et al., 2017). Therefore, doing so allows a real test of whether the UoO hypothesis, CI or the reference-dependence theories hold for match-day determinants (Coates & Humphreys, 2010, 2012; Fort & Quirk, 2010, 2011; Mills & Fort, 2014; Pawlowski & Nalbantis, 2015).

Structure and issues of the Italian football Serie A

The Italian Serie A, organised by the Italian professional football league (Lega Nazionale Professionisti Serie A, also known as Lega Serie A), was considered the most important professional football league up to the first half of the 2000s (Boeri & Severgnini, 2014). Even though historically dominated by three clubs (Juventus, AC Milan and Inter Milan), the league experienced almost three decades of high competitive balance. Teams such as Hellas Verona, Napoli, Sampdoria, Roma and Lazio all won the Scudetto, and teams such as Parma and Fiorentina consistently fought for the title and actively contributed to the remarkable performance of the Italian clubs in the UEFA competitions (26 titles between 1979-80 and 2005-06).

However, the image of the league was tarnished in 2006 by the "Calciopoli" scandal that revealed a consolidated network of suspicious relationships between the referee organisations and the management of the league champion, Juventus; and other Serie A teams, such as; AC Milan, Fiorentina, Lazio and Reggina. Serie A's reputation was further harmed in 2007 by the murder of a Police Officer before the match between Catania and Palermo, which represented a rise of violence and hooliganism leading to the introduction of the so-called "Supporter's ID Card". This identity card identifies fans of specific teams and is compulsory to buy season tickets and away game tickets; moreover, the possession of the Supporter's ID Card is necessary to attend matches that are considered potentially dangerous because of the rivalry between the two teams' supporters (Boeri & Severgnini, 2014).

The decline of Italian football has been exacerbated by short-sighted and ineffective managerial policies. Amid an increase in cash flow from the sale of the broadcasting rights, all Italian football clubs have substantial liabilities due to spending the entire increased cash flow

on transfer fees and player wages rather than in profitable investments such as the renovation of the obsolete stadiums or the building of new ones. This led to the bankruptcy of historic clubs such as Napoli, Fiorentina and Parma and the massive increase in the liabilities of almost all the Italian clubs (Boeri & Severgnini, 2014).

Moreover, since 2001, only three clubs (Juventus, AC Milan and Inter Milan) have managed to win the title, and all the three seasons under investigation in this study have been dominated by one team – Juventus – who has won the title in 2011-12 and continuously from 2015-16 to 2018-19. Over the 2001-02 to 2014-15 seasons, the Serie A is the second least competitive among the top 5 European leagues, based on the Herfindahl-Hirschman Index (HHI), with figures of; 5.46 (German Bundesliga), 5.31 (Italian Serie A), 5.15 (Spanish Liga), 4.38 (English Premier League), and 3.77 (French Ligue 1). This measure is generally used to measure long-run competitive balance, where the higher the value of the HHI, the lower the level of long-run competitive balance in a league (Eckard, 1998; Leeds & von Allmen, 2016). Also, considering that all the Serie A matches are broadcast on TV (or other digital platforms) and the league has not adopted any blackout policy, it is not surprising the average stadium capacity utilisation after the Calciopoli scandal has remained low at 61% (stadiapostcards.com). Considerably less than other leagues such as the English Premier League and the German Bundesliga are consistently over 90% (UEFA 2018).

The competition involves 20 teams playing each other in 38 game weeks. At the end of the season, the first team in the standings wins the so-called "Scudetto", whereas the three last teams are relegated to Serie B. The qualification of a team into UEFA competitions (Champions League and Europa League) depends on its final position in the standings and, in the three seasons considered, is was determined as follows:

- the first two qualify directly for the next Champions League

- the third qualifies for the Champions League play-off
- the fourth qualifies for the Europa League
- the fifth and sixth can also qualify for the Europa League play-offs dependent on the results of the "Coppa Italia", a knock-out competition involving both professional and amateur clubs. The "Coppa Italia" winner qualifies for the Europa League if not already qualified for UEFA competitions as a consequence of its final position in the league: in this case, the fifth in the standings qualify for the Europa League play-offs. However, if the winner had already qualified for UEFA competitions as a consequence of its position in the standings, the fifth qualifies for the Europa League and the sixth qualifies for the Europa League play-offs.

The empirical specification

The empirical investigation covers three seasons of the Italian Serie A, from 2012-13 to 2014-15. Taking inspiration from Scelles et al. (2016), we have estimated different specifications of the following demand model:

$$ln\left(gameday\_tickets_{ijt}\right) = \alpha X_{ijt} + \beta D + \gamma S + e_{ijt} \qquad (1)$$

where the dependent variable is represented by the number of match-day tickets sold excluding the season tickets, X_{ijt} is a vector of independent variables, D is a vector of dummy variables, S is a vector of season fixed effects, α, β, and γ are the associated coefficients, and e_{ijt} is the disturbance term. As previously mentioned, season-ticket holders were excluded from analysis because they generally represent committed fans, whose attendance is part of their identity and self-image (Szymanski, 2001; Robinson & Trail, 2005). Additionally, the number of season ticket-holders will remain constant regardless of the peculiarities of the individual game, which would be detrimental to a match-level analysis. Match-day tickets data have been obtained

from www.stadiapostcards.com and are not available for Chievo Verona (for all the three seasons considered), Cagliari (for the first two seasons), eight Udinese's home games in 2012-13, Parma-Palermo (2012-13) and Napoli-Verona (2013-14): consequently, these games have been excluded from the dataset. Moreover, to obtain higher reliability of the analysis, we have taken into account games from the third fixture, as, also considering how the variables capturing CI have been created, it is incredibly complicated to differentiate among the different sporting prizes after only one or two fixtures.

Among the explanatory variables, we have included the annual unemployment rate of the city where the game is played (*unemployment*) as a macroeconomic factor potentially impacting on attendance (Borland & MacDonald, 2003); *home_fans* and *away_fans*, are simply the total number of supporters of the two teams across the whole Italian territory; and, a set of proxies for the expected quality of the game, with *home_rank* and *away_rank* indicating the position in the standings of the two teams before the game; whereas *home_wages* and *away_wages* are the teams' relative wages, where a team's relative wage is given by the team payroll divided by the average seasonal payroll.

Then, we have considered a set of variables capturing the incentives for attending, where *home_promotion* is a dummy variable equal to 1 if the home team played in Serie B in the previous season, and *away_promotion* is the equivalent for the away teams; *goal_average* is the average number of goals scored by the home team before the game; *distance*, used previously by Buraimo, Forrest & Simmons (2006) and, Tainsky and McEvoy (2012), measures the distance, in km, between the town centres of the two cities of teams involved in the game.

Other explanatory variables are; *fixture*, also used by Di Domizio (2013) and Caruso et al. (2017), that is the count of matches in each season also included in quadratic form to verify

the existence of a non-linear relationship with the attendance as suggested in Pawlowski and Anders (2012), Pawlowski and Nalbantis (2015), and Wallrafen, Pawlowski & Deutscher (2018); *working_day*, a dummy variable, suggested in Buraimo and Simmons (2015) and used by Caruso et al. (2017), defining the time allocation of matches and indicating whether a match is scheduled on a weekday or not; a set of dummy variables indicating the kick-off time of the games played in weekends: *sat_eve* relates to games played at 6 pm on Saturdays, *sat_nig* at 8.45 pm on Saturdays, *sun_eve* at 3 pm on Sundays, *sun_nig* at 8.45 pm on Sundays and *noon* at 12.30 pm on Sundays; and a set of variables capturing weather conditions associated with a game. Feddersen and Rott (2011), for example, used temperature, rainfall and wind conditions as covariates in the regression analysis of the determinants of demand for televised live soccer in Germany. We have used two integer variables, *temperature* and *humidity*: the first measures the average daily temperature, and the second the average daily humidity during the day when matches have been played. Also, four dummy variables are included: *rain*, *storm*, *fog* and *snow*.

Finally, we have included *outcome_uncertainty*, that is the UoO-related variable obtained from the betting market (more precisely from *BET365*, that provide the most comprehensive dataset) and calculated as the differences (in absolute value) between the home and the away team win probabilities (Buraimo & Simmons, 2009). Using absolute value differences rather than draw probabilities are more sensitive to the actual gap between teams; a set of dummies capturing league standing effect and competitive intensity, where *ncs* and *pcs* stand for any negative and any positive change in standing during the home team's last two games, *scudetto* indicates whether the home team is fighting for the title, *champions_league* for a direct entry to the Champions League (second position), *champions_league_playoff* for an entry to the Champions League qualifying round (third position), *europa* for a direct entry to the Europa League (fourth and fifth position), *europa_playoff* for an entry to the Europa League qualifying round (sixth position, as in the three seasons considered both the winner and the finalist of the

"Coppa Italia" were in the first five positions), *top_bottom* for two different sporting prizes (relegation and one of the above-mentioned) and *relegation* to avoid one of the last three positions; as well as a variable measuring fans' expectations against the home team performance, aiming to fill a gap in the literature inspired from Scelles et al. (2016, p.22), as "the attractiveness of sporting prizes for fans does not only depend on their absolute importance but also the anticipated position of the home team". This variable (*fan_expectations)* is calculated as the difference between the home team's predicted final position according to Eurobet "ante-post" odds and the position in the standings before the game. Thus, a positive value corresponds to a better seasonal performance than expected.

The set of dummies capturing the competitive intensity has been created following Scelles et al. (2016). They are functions of the point difference for the home team relating to the league prizes. The temporal horizons chosen to calculate our dummies, determining the maximum point difference/number of matches is relevant to consider competitive intensity, are the next match and the next two matches, as they are considered the most appropriate temporal horizons also by Scelles et al. (2013a). If the home team is in contention for more than one sporting prize among the first five, only the highest prize is taken into account (1 for this prize, 0 for the other prizes), whereas the following rule is applied to the two-match temporal horizon in order to limit the number of *top_bottom* observations: if one match is sufficient for a higher prize whereas two matches are required for a lower prize, the prize is considered as the higher prize (for example, if a team is 3 points behind the third place and 5 points ahead of the sixth, it is considered in contention for the Champions League play-off).

The data consist of 980 games and are mostly drawn from the data set AUDIBALL (Caruso & Di Domizio, 2015). Table 1 provides the descriptive statistics of all the variables. Some variables were not available in AUDIBALL and obtained from other sources: ISTAT

(www.istat.it) for *unemployment*, www.tifosobilanciato.it for *home_fans* and *away_fans*, www.ilmeteo.it for variables capturing weather conditions and Lega Calcio (www.legaseriea.it) for dummies capturing league standing effect and competitive intensity.

Table 1 about here

Empirical results

Our results are shown in Table 2. All the explanatory variables (except for *fixture*, *home_rank* and *away_rank,* that are ordinal variables) are expressed in natural logs to interpret the estimated coefficients as elasticities. The coefficients of the dummy variables are then transformed into percentage points of 100 (exp(β)-1) for interpretation (Vittinghoff, Glidden, Shiboski & McCulloch, 2012; Nalbantis et al. 2015). We have also verified the absence of strong collinearity by calculating the variance inflation factors (VIF) of our independent variables, that are all lower than 10 (Appendix A).

A Tobit model (Tobin, 1958) with individual cut-off points has been implemented in order to account for the truncation of attendance at the upper boundary. As our independent variable is represented by the number of match-day tickets sold excluding the season tickets, the individual cut-off points are not represented by the stadium capacity but by the "available" tickets, measured as the difference between the stadium capacity and the season tickets. Consequently, nine observations within the Tobit model are right censored.

The first two specifications (1 and 2) of the Tobit model, correspond to the two different temporal horizons (next match and next two matches), and are based on Andreff and Scelles (2015) and Scelles et al. (2016), among the explanatory variables are all the dummies capturing league standing effect and competitive intensity without accounting for fans' expectations. From this, it is clear that *ncs* and *pcs* are not significant, indicating neither a negative nor a

positive change in league standing during the home team's last games have an impact on the attendance. If we consider the seven dummy variables measuring the competitive intensity, only; *champions_league, champions_league_playoff* and *relegation* are significant at the 5% level for both temporal horizons. Whereas, *scudetto* is significant only for the second temporal horizon as well as *top_bottom* (at the 10% level). The two variables for the Europa League entry are not significant.

Table 2 about here

These results differ from Scelles et al. (2016), where all the dummies for the Ligue 1 prizes were significant. This might suggest that Serie A fans do not take into account only whether their team is in contention for a prize, but also the relevance and attractiveness of that prize. For example, and consistent with Scelles (2017) finding within the English Premier League TV audience, entry into the Europa League is not considered an attractive prize. This is not surprising considering the narrative competing in the Europa League is perceived as potentially detrimental to league performance by Italian clubs' managers due to the games being scheduled on Thursdays - reducing the rest time for the next league game. Consequently, the negative effect that the Europa League qualification has on fans expecting their team to perform above this prize is not compensated by the positive effect that achieving this prize has on fans expecting their team to avoid the relegation. On the other hand, the significance of the *relegation* coefficients (with attendance between 31% and 41% higher) indicates that avoiding the relegation is perceived as a more appealing prize. This is probably because escaping the relegation is the most crucial objective of the season for the teams at the low end of the table. Therefore, being in contention for this prize may represent a greater motivation for fans of the small or poor-performing clubs to attend and support their own team.

In the second type of specifications (3 and 4) we have added the variable used to measure the home team performance against fans' expectations – home team's predicted final position according to Eurobet "ante-post" odds and the position in the standings before the game. We have removed the variable *home_rank* to prevent collinearity. The results concerning the league standing effect and competitive intensity variables do not change, whereas *fan_expectations* is significant for both temporal horizons. For the first time, this provides empirical evidence for the existence of reference-dependent preferences in the Serie A fans' behaviour (Coates et al., 2014). Therefore, demand is higher when teams are performing better than pre-season expectations, which supports the general narrative that team performance is crucial in fan's decision-making process. This also goes some way to corroborate the postulation that team success impacts fan's self-esteem when following their favourite team as it is heavily linked to their personal identity (Robinson & Trail, 2005)

Conclusions

Even though league standing effect and competitive intensity are concepts already contained in Neale's (1964) seminal work, there are not many studies within the literature aiming to verify the impact of these potential factors affecting the demand for sport. This research has focused on three seasons of the Italian Serie A and investigated league standing effect and competitive intensity as potential determinants of the demand for football in Italy, taking inspiration from the analysis conducted by Andreff and Scelles (2015) and Scelles et al. (2016) for the French Ligue 1.

Our results differ from the above-mentioned works, showing that not all the sporting prizes are appealing to Serie A fans. More specifically, being in contention for direct entry into the Europa League or a Europa League playoff position does not have any impact on the stadium attendance measured by the number of match-day tickets sold – excluding the season

tickets in the Italian Serie A. This may suggest the existence of cultural differences between fan's behaviours across Europe, which requires further research.

Moreover, we have also investigated the impact of fans' expectations on attendance, finding evidence in favour of reference-dependent preferences in the Italian fans' behaviour (Coates et al., 2014). This indicates that, regardless of the policies implemented by the league management, the on-field performance of a team, more specifically the capacity to over-perform their expectations, remains a key factor in fans' decision-making process.

These results, alongside the value of the coefficients of the different sporting prizes, show that being in contention for the Champions League direct entry or for escaping the relegation is more appealing than fighting for the title. This finding may depend on the fact that, as above mentioned, in the three seasons considered the league has been dominated by Juventus; but also, hints towards the possibility that sporting prizes have a different attractiveness according to the characteristics of a club and its fans' expectations. For example, the fight for the Champions League often involves not only big clubs but also clubs with lower budgets (Udinese, Fiorentina, Lazio and Sampdoria in the seasons under investigation). Consequently, the coefficients for the Champions League entry may benefit from this sporting prize being almost as appealing as the title race to the big clubs' fans. Similarly, it is incredibly appealing to the fans of smaller clubs that hardly compete for the title but may have chances to compete for the qualification to the main UEFA club competitions.

Alternatively, the Europa League entry may not have any impact as it is often perceived as a consolation prize by big clubs' fans and, on top of that, the narrative of this competition being potentially detrimental to the league performance may make it not particularly appealing to the fans of smaller clubs either. Therefore, further investigation of the attractiveness of the sporting prizes in relation to the fans' expectations is needed, which emphasises Scelles et al.

(2016) suggestion. More specifically, further research would need to use a larger dataset than the current study and investigate the results by distinguishing between different groups of clubs based on their budgets.

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Table 1. Descriptive statistics of the main variables

	Obs.	Mean	Std. Dev.	Min	Max
gameday_tickets	980	8939.7	9019.5	65	59669
unemployment	980	10.688	4.880	5	25
home_fans	980	1266130	1902139	20442	7086915
away_fans	980	1180700	1846660	20442	7086915
home_rank	980	9.852	5.825	1	20
away_rank	980	10.028	5.731	1	21
home_wages	980	46.42	33.24	11	120
away_wages	980	43.75	32.81	11	120
home_promotion	980	0.165	0.372	0	1
away_promotion	980	0.148	0.355	0	1
goal_average	980	1.372	0.482	0	4
distance	980	438.4	298.3	0	1228
fixture	980	20.44	10.40	3	38
working_day	980	0.167	0.373	0	1
sat_eve	980	0.099	0.299	0	1
sat_nig	980	0.094	0.292	0	1
sun_eve	980	0.395	0.489	0	1
sun_nig	980	0.133	0.339	0	1
noon	980	0.073	0.261	0	1
temperature	980	12.603	5.744	-2	28
humidity	980	75.217	13.423	20	100
rain	980	0.383	0.486	0	1
storm	980	0.085	0.279	0	1
fog	980	0.143	0.350	0	1
snow	980	0.014	0.119	0	1
fan_expectations	980	0.124	4.889	-13	14
outcome_uncertainty	980	0.295	0.198	0	1
ncs	980	0.335	0.472	0	1
pcs	980	0.285	0.451	0	1
scudetto	980	0.058	0.234	0	1
champions_league	980	0.047	0.212	0	1
champions_league_playoff	980	0.073	0.261	0	1
europa	980	0.138	0.345	0	1
europa_playoff	980	0.048	0.214	0	1
top_bottom	980	0.040	0.196	0	1
relegation	980	0.187	0.390	0	1
scudetto1	980	0.112	0.316	0	1
champions1	980	0.063	0.244	0	1
champions_playoff1	980	0.085	0.279	0	1
europa1	980	0.155	0.362	0	1
europa_playoff1	980	0.042	0.200	0	1
top_bottom1	980	0.061	0.240	0	1
relegation1	980	0.288	0.453	0	1

Table 2. Stadium attendance, competitive intensity and fans' expectations

Dependent variable	*Gameday_tickets*			
	(1)	(2)	(3)	(4)
unemployment	0.573***	0.551***	0.552***	0.531***
	(0.069)	(0.067)	(0.069)	(0.067)
home_fans	0.104***	0.114***	0.126***	0.138**
	(0.031)	(0.032)	(0.031)	(0.032)
away_fans	0.092***	0.100***	0.092***	0.100***
	(0.031)	(0.030)	(0.030)	(0.030)
home_rank	-0.004	-0.005		
	(0.007)	(0.007)		
away_rank	-0.015***	-0.014**	-0.015***	-0.014***
	(0.005)	(0.005)	(0.005)	(0.005)
home_wages	0.391***	0.369***	0.402***	0.386***
	(0.080)	(0.080)	(0.077)	(0.079)
away_wages	0.235***	0.231***	0.232***	0.228***
	(0.071)	(0.069)	(0.070)	(0.069)
home_promotion	0.184***	0.186***	0.125**	0.121*
	(0.061)	(0.061)	(0.063)	(0.063)
away_promotion	0.158**	0.163***	0.155**	0.160**
	(0.063)	(0.062)	(0.062)	(0.062)
goal_average	0.472***	0.453***	0.366**	0.364**
	(0.152)	(0.150)	(0.148)	(0.146)
distance	-0.068***	-0.067***	-0.067***	-0.067***
	(0.010)	(0.010)	(0.010)	(0.010)
fixture	-0.012	-0.015	-0.009	-0.011
	(0.015)	(0.014)	(0.015)	(0.014)
fixture2	0.001	0.001*	0.000	0.001*

	(0.000)	(0.000)	(0.000)	(0.000)
working_day	-0.247**	-0.226**	-0.259**	-0.234**
	(0.103)	(0.098)	(0.152)	(0.098)
sat_eve	-0.006	0.015	-0.021	0.006
	(0.104)	(0.100)	(0.103)	(0.100)
sat_nig	0.032	0.056	0.025	0.052
	(0.106)	(0.103)	(0.106)	(0.103)
sun_eve	-0.124	-0.102	-0.139	-0.112
	(0.095)	(0.092)	(0.094)	(0.091)
sun_nig	-0.094	-0.105	-0.103	-0.107
	(0.106)	(0.102)	(0.105)	(0.101)
noon	0.019	0.046	0.001	0.030
	(0.123)	(0.119)	(0.122)	(0.118)
temperature	0.137*	0.163**	0.155*	0.185**
	(0.081)	(0.080)	(0.080)	(0.080)
humidity	0.231*	0.241*	0.240*	0.251**
	(0.127)	(0.154)	(0.125)	(0.122)
rain	-0.159***	-0.154***	-0.160***	-0.156***
	(0.047)	(0.046)	(0.047)	(0.046)
storm	-0.015	-0.015	-0.020	-0.019
	(0.085)	(0.083)	(0.085)	(0.084)
fog	0.127**	0.122**	0.118**	0.111*
	(0.059)	(0.059)	(0.059)	(0.059)
snow	0.100	0.078	0.112	0.092
	(0.172)	(0.159)	(0.175)	(0.161)
outcome_uncertainty	0.806***	0.832***	0.808***	0.839***
	(0.157)	(0.154)	(0.156)	(0.152)
ncs	0.022	0.037	0.015	0.027

	(0.052)	(0.052)	(0.051)	(0.051)
pcs	0.059	(0.066)	0.041	0.046
	(0.051)	0.052	(0.051)	(0.052)
scudetto	0.067		0.035	
	(0.112)		(0.109)	
champions_league	0.391***		0.349***	
	(0.099)		(0.095)	
champions_league_playoff	0.182***		0.140	
	(0.088)		(0.085)	
europa	-0.051		0.021	
	(0.066)		(0.063)	
europa_playoff	0.004		-0.015	
	(0.106)		(0.107)	
top_bottom	0.002		-0.010	
	(0.150)		(0.145)	
relegation	0.267***		0.281***	
	(0.067)		(0.066)	
scudetto1		0.260***		0.199**
		(0.100)		(0.096)
champions1		0.452***		0.402***
		(0.100)		(0.095)
champions_playoff1		0.292***		0.242***
		(0.088)		(0.085)
europa_1		0.107		0.073
		(0.074)		(0.073)
europa_playoff1		0.120		0.096
		(0.099)		(0.098)
top_bottom1		0.218*		0.205*

		(0.118)		(0.118)
relegation1		0.341***		0.363***
		(0.078)		(0.075)
fan_expectations			0.170***	0.190***
			(0.056)	(0.057)
2012	-0.005	-0.002	-0.002	-0.003
	(0.052)	(0.052)	(0.052)	(0.052)
2013	0.008	0.008	0.009	0.006
	(0.048)	(0.048)	(0.048)	(0.048)
Constant	3.515***	3.049***	2.830***	-2.253***
	(0.879)	(0.860)	(0.886)	(0.865)
Sigma	0.368	0.366	0.365	0.362
	(0.20)	(0.020)	(0.020)	(0.020)
Observations	980	980	980	980

Robust standard errors in parentheses obtained using the robust or sandwich estimator of variance; p*<0.10, p**<0.05, p***<0.01.

Appendix A. VIF statistics

Variable	VIF			
	(1)	(2)	(3)	(4)
unemployment	1.60	1.59	1.60	1.60
home_fans	6.86	6.89	7.16	7.22
away_fans	4.46	4.47	4.45	4.46
home_rank	4.30	5.09		
away_rank	2.17	2.17	2.17	2.17
home_wages	7.62	7.64	7.27	7.41
away_wages	5.21	5.20	5.22	5.20
home_promotion	1.36	1.35	1.44	1.43
away_promotion	1.24	1.24	1.24	1.25
goal_average	2.96	2.95	2.81	2.85
distance	1.11	1.11	1.11	1.11
fixture	1.74	1.95	1.75	1.95
working_day	4.37	4.38	4.37	4.38
sat_eve	3.20	3.18	3.20	3.18
sat_nig	3.21	3.22	3.21	3.21
sun_eve	6.66	6.67	6.66	6.66
sun_nig	4.06	4.11	4.05	4.09
noon	2.61	2.60	2.61	2.60
temperature	1.41	1.41	1.41	1.42
humidity	1.53	1.53	1.53	1.53
rain	1.39	1.38	1.39	1.38
storm	1.21	1.20	1.21	1.20
fog	1.34	1.33	1.34	1.33
snow	1.14	1.13	1.14	1.13
fan_expectations			1.44	1.51
outcome_uncertainty	1.61	1.60	1.61	1.60
ncs	1.49	1.50	1.50	1.51
pcs	1.43	1.48	1.41	1.46
scudetto	1.78		1.70	
champions_league	1.32		1.24	
champions_league_playoff	1.42		1.30	
europa	1.50		1.37	
europa_playoff	1.15		1.12	
top_bottom	1.46		1.45	
relegation	1.85		1.72	
scudetto1		2.99		2.68
champions1		1.79		1.58
champions_playoff1		1.77		1.63
europa1		1.95		1.79
europa_playoff1		1.27		1.27
top_bottom1		1.85		1.84
relegation1		3.00		2.77
Mean	2.58	2.74	2.48	2.60